

REMARKS

Claims 2-6, 11 and 18-23 are pending in the instant application, and stand rejected under 35 U.S.C. §§ 112 and 103(a). Claim 11 is additionally objected to because of informalities. Accordingly, claim 11 is additionally amended to indicate antecedence of claim 18. Claims 2, 5, 6, 11, 18, 21, 22 and 23 are amended herewith, to correct informalities and to distinctly and clearly claim applicant's invention. No new matter is added with the amendments presented herein.

We believe that the above amendments and the remarks laid out below address and overcome the objection and each of the rejections presented in the Office Action mailed 04 October 2005.

Specification

The specification is amended to correct formal matter and to more clearly identify applicant's stack leak and reservoir containment members. No new matter is added to the specification.

Drawings

The Examiner requires new corrected drawings, stating that the drawings are informal and hard to understand. Respectfully, applicants submitted corrected, formal drawings on 05 March 2003. The corrected, formal drawings should be included in the Patent Office file for the instant application, since they are viewable in the PAIR system. However, for the Examiner's convenience, a new copy of the formal drawings is attached following the Remarks section of this paper.

Claim Objections

Claim 11 is amended to reference base claim 18, as correctly identified by the Examiner.

Claim Rejections – 35 U.S.C. § 112

Claims 2-6, 11 and 18-23 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner states that it is unclear and indefinite to claim a containment member that is located underneath and exterior to a plurality of stacked cells, and that it is unclear as to which containment member the applicant is referring to in the claims. We believe the amendments described below address the Examiner's concerns and overcome the § 112, second paragraph rejections.

Independent Claim 18: Claim 18 is amended to recite a stack leak containment member disposed underneath of and surrounding at least a portion of the plurality of stacked cells (further amendments to claim 18 are discussed in the subsection dealing with 35 U.S.C. § 103 rejections). This amendment is supported throughout the specification, which for example recites: "Leak detection system 10 is shown in Fig. 1 as comprising stack leak containment member 12." Page 6, line 7. "Electrolyte stack containment member 12 is shown in Fig. 1 as comprising base 30 and sides 32 which define cavity 34. As will be understood *at least a portion of stack 102 is positioned within cavity 34*". Page 6, lines 18-20, emphasis added.

Dependent Claims 2-6, 11, 19, 20, 22 and 23: The aforementioned claims depend, directly or indirectly, from claim 18. Where appropriate, these dependent claims are amended to recite the stack leak containment member of amended claim 18. In addition, claim 5 is amended to clarify that the plurality of stacked cells (claim 18) include at least two vertically stacked assemblies. Claim 5 and claim 6 are also amended to differentiate upper and lower stack leak containment members from the stack leak containment member of claim 18. Claim 23 is amended to differentiate a reservoir leak containment member from the stack leak containment member of claim 18. Where appropriate, additional amendments are made for clarification or to correct grammatical errors.

Independent Claim 21: Claim 21 is amended to clarify that a reservoir leak containment member is disposed underneath and exterior to the reservoir (further amendments to claim 21 are discussed in the subsection dealing with 35 U.S.C. § 103 rejections).

Claim Rejections – 35 U.S.C. § 103

Claims 2-6, 11 and 18-23 also stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,242,125 (hereinafter, "Eidler") in view of U.S. Patent No. 4,628,302 (hereinafter, "Barr"). We respectfully disagree with and traverse the rejections of claims 2-6, 11 and 18-23, since the cited art does not teach or suggest each and every limitation of these claims. Per MPEP §2142, Eidler in view of Barr cannot, therefore, establish *prima facie* obviousness.

Independent Claim 18: For example, Eidler in view of Barr does not teach or suggest every limitation of Applicants' claim 18, as amended. Amended claim 18 recites a leak detection system for a flowing electrolyte battery having a housing and a plurality of

stacked cells within the housing, and electrolytic fluid circulating through the interior of the stacked cells, including:

- (a) a stack leak containment member within the housing, the stack leak containment member disposed underneath of and surrounding at least a portion of the plurality of stacked cells, the stack leak containment member collecting electrolytic fluid leaking from the plurality of stacked cells; and
- (b) a sensor disposed in a space between the interior of the stack leak containment member and exterior to the stacked cells, the sensor detecting the presence of uncirculated electrolytic fluid in the space when the uncirculated electrolytic fluid contacts the sensor.

The Examiner notes that Eidler discloses a container 13, and likens the Eidler's container 13 to applicant's stack leak containment member. We respectfully disagree. As laid out in amended claim 18, applicant's stack leak containment member is disposed both within a housing and beneath and surrounding at least a portion of a plurality of stacked cells. Eidler's container 13 is not disposed within a housing; rather, it appears to form the sole housing for Eidler's entire circulation system. See, e.g., Eidler FIG. 1. Indeed the Examiner has noted "the containment member in Eidler is the housing 13". Office Action p. 5, line 4 of "Response to Arguments." There is no separate containment member within Eidler's "housing" 13, let alone a stack leak containment member disposed underneath of and at least partially surrounding a plurality of stacked cells. For example, as shown in FIG. 1, there is no container (of any type) between batteries 19 and container 13.

Eidler also does not teach or suggest a sensor that detects the presence of uncirculated electrolytic fluid that is in the space in which it the sensor disposed, when the uncirculated electrolytic fluid contacts the sensor. Eidler instead recites a liquid level sensor 130. The sensor detects a low or high level of liquid within an anolyte or catholyte reservoir. See Eidler col. 6, lines 12-33. It is important to note that both of these liquids are circulated fluids: "anolyte pump 30 pumps anolyte from the anolyte reservoir 15... The anolyte is circulated in a direction shown by arrow L1." Eidler col. 4, lines 21-24; FIG. 3. "The catholyte is pumped from the reservoir 17...[and] circulated in a direction shown by arrow L2." Eidler col. 4, lines 43-48; FIG. 3. Eidler thus detects an amount of circulated fluid, apparently when the circulated fluid contacts the sensor.

The Examiner states that in Eidler, a low level of liquid within the reservoir would indicate a leak of electrolyte from "some location" in the system 10. See Office Action p 4,

lines 9-10. Eidler's fluids within reservoirs 15, 17 are described as circulated fluids. Thus, if we follow the Examiner's line of reasoning, Eidler's sensor senses a level of circulated fluid, which may indirectly indicate that there is uncirculated fluid (a leak) elsewhere in the system. Eidler's sensor does sense uncirculated fluid in the space in which it resides. Neither does Eidler's sensor contact the uncirculated fluid.

Indeed, Eidler cannot teach sensing uncirculated fluid in a space shared with the sensor, when the uncirculated fluid contacts the sensor. Eidler's reservoirs 15, 17 clearly contain circulated fluids. In order for these fluids to become uncirculated fluids, they would have to leak from normal circulation. In other words, Eidler's anolyte or catholyte would become uncirculated if they leaked from reservoirs 15, 17 or from another site in the circulation. In either case, these fluids would be unable to contact sensor 130, which is contained within Eidler's circulatory path. Eidler thus teaches away from (1) a sensor that detects uncirculated fluid in the space in which the sensor is disposed, and (3) a sensor that detects uncirculated fluids by contacting the uncirculated fluids.

Adding Barr does not remedy the failings of Eidler. For example, Barr does not teach or suggest a stack leak containment member, nor does Barr teach or suggest a sensor that detects uncirculated fluid in the space in which it is disposed, or a sensor that detects uncirculated fluids by contacting them. Rather, every indication in Barr points to a sensor that senses circulated fluids.

For example, Barr teaches a simple liquid level sensor consisting of two probes mounted in a vessel containing ionic liquid. See col. 3, lines 3-6. Barr notes that the sensor is especially advantageous "the vessel 35 is a radiator for a motorized vehicle, and the ionic liquid is water plus any other electrically-conductive substance which may be in solution in the water to act as an additive or a coolant in the radiator." Col. 3, lines 10-14. Radiator fluid is circulated through a closed system, from radiator to engine, through a thermostat and back to the radiator. Radiator fluid becomes uncirculated if it leaks from the vessel or another part of the closed system; however, Barr does not provide for sensing uncirculated fluid. Like Eidler, Barr's sensor is in the vessel, and it cannot sense uncirculated fluids by contact, because the uncirculated fluid is external to the vessel (and the rest of the closed system).

As shown, Eidler in view of Barr fails to teach or suggest several of the elements of claim 18, whether the patents are taken alone or in combination. Claim 18 is believed patentable over the cited patents, at least because *prima facie* obviousness is not established.

Dependent Claims 2-6, 11, 19, 20, 22 and 23: Courts have ruled that if an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071.5 USPQ2d 1596 (Fed. Cir. 1988). Thus, the aforementioned claims are allowable over Eidler in view of Barr at least because they depend, directly or indirectly, from claim 18. However, these claims include additional patentable features that are not taught or suggested by Eidler in view of Barr, including the following examples:

Claim 2: Claim 2 depends from claim 18 and further requires at least one switch comprising a first plate and a second plate; wherein uncirculated fluid within the stack leak containment member forms an electric current path between the first plate and the second plate.

As noted above, Eidler in view of Barr does not teach or suggest applicant's stack leak containment member. Neither do the cited references teach or suggest uncirculated fluid within a stack leak containment member forming an electric current path. Eidler in view of Barr deals with circulated fluid.

Claim 4: Claim 4 depends from claim 2, and further requires a plurality of switches connected in parallel. The Examiner states that in Barr, "a resistor is positioned parallel to multiple switches." See Office Action page 4, final paragraph. However, this is different from switches connected in parallel. Barr teaches that his switches are connected in series. "One pole of the first switch means 40 is connected, at node 51, to a resistor 47 in series with a DC voltage source," and "one pole of the second switch means 61 is connected, at node 65, in series with a resistor 59 and a DC voltage source." Barr col. 3, lines 21-23 and col. 3, line 66-col. 4, line 1; see also col. 4, lines 7-10.

Claim 5: Amended claim 5 requires at least one upper stack leak containment member associated with an upper assembly of stacked cells. The upper stack leak containment member has an overflow opening which directs overflow of uncirculated electrolytic fluid into a lower stack leak containment member associated with a lower assembly of stacked cells.

Neither Eidler nor Barr teach or suggest a stack leak containment member, and certainly not upper and lower stack leak containment members. The cited patents, alone or in combination, also fail to teach or suggest upper and lower assemblies of stacked cells. Barr is completely silent as to any such arrangement, and Eidler teaches batteries 19 positioned side-by-side. See, e.g., Eidler FIGs. 1, 2. The Eidler and Barr references are also silent as to any overflow opening for directing uncirculated electrolytic fluid into a lower containment member.

Claim 6: Amended claim 6 depends from claim 5, and benefits from like argument. In addition, claim 6 requires the upper and lower stack leak containment members to include corresponding sensors for detecting presence of an uncirculated electrolytic fluid. As noted above with respect to claim 18, neither Eidler's nor Barr's sensors detect uncirculated fluid. Further, neither Eidler nor Barr teach sensors within an upper or a lower stack leak containment member.

Claim 22: As amended, claim 22 requires an electrolyte reservoir with a reservoir leak containment member disposed underneath and exterior to the reservoir, and a sensor disposed between the interior of the leak containment member and exterior to the reservoir. Again, Eidler does not disclose both a housing and a leak containment member, of any type. Further, Eidler does not disclose a sensor disposed between a reservoir leak containment member and an electrolyte reservoir. Rather, Eidler recites "liquid level sensors *in* the reservoirs 15 and 17". Eidler col. 6, line 23, emphasis added; FIG. 8. The Examiner has recognized this placement of Eidler's sensors, noting that in Eidler, "liquid level sensors (130) are provided *in* each electrolyte reservoir." Office Action p. 4, lines 3-4.

Adding Barr does not supply the elements missing from Eidler. For example, Barr also fails to recite a leak containment member or a sensor placed as required in claim 22. Instead, Barr recites "the first and second probe members 13 and 15 may be metallic elements of almost any form which are fixedly mounted to protrude a short distance into the ionic liquid *in the vessel 35*." Barr col. 9, lines 46-51, emphasis added.

A liquid level sensor *in* an electrolyte reservoir is clearly different from Applicant's reservoir sensor disposed in a space between the interior of a reservoir leak containment member and exterior to an electrolyte reservoir. In addition, claim 22 recites the reservoir sensor detecting the presence of uncirculated fluid in the space between the interior of the reservoir leak containment member and the exterior of the electrolyte reservoir. As noted with respect to claim 18, Eidler and Barr do not detect the presence of uncirculated fluid.

Claim 23: Amended claim 23 depends from claim 22, and additionally requires a stack leak containment member located above the reservoir leak containment member. Again, Eidler in view of Barr do not teach or suggest two containment members disposed one over the other. Nor do the references teach an overflow opening for directing electrolytic fluid into a reservoir leak containment member. See arguments in support of claim 5, above.

As shown above, Eidler in view of Barr fails to teach or suggest all of the limitations of dependent claims 2-6, 11, 19, 20, 22 and 23. Whether taken alone or in combination, Eidler in view of Barr therefore cannot and does establish a case of *prima facie* obviousness over the aforementioned claims.

Independent Claim 21: Amended claim 21 requires a sensor disposed in a space between the interior of a reservoir leak containment member and exterior to a reservoir, the sensor detecting the presence of uncirculated electrolytic fluid in the space between the interior of the reservoir leak containment member and the exterior of the reservoir.

As noted above with respect to claim 18, Eidler in view of Barr fails to teach or suggest detecting the presence of an uncirculated fluid, especially not in the space between the interior of a containment member and the exterior of a reservoir. As noted with respect to claim 22, above, both Eidler and Barr recite sensors within an electrolyte reservoir (Eidler) or within a vessel (Barr). The cited references, alone or in combination, fail to teach each limitation of claim 21, and therefore cannot render the claim *prima facie* obvious.

Response to Arguments

We thank the Examiner for clarifying his interpretation of the prior art in light of the instant application. However, as laid out herein, we nevertheless believe claims 2-6, 11 and 18-23 allowable over the cited references.

Conclusion

Claims 2-6, 11 and 18-23 are amended to point out and distinctly claim applicant's invention, thus overcoming the 35 U.S.C. §103 rejection. The cited art does not teach or suggest each limitation of claims 2-6, 11 and 18-23, as amended, and therefore fails under 35 U.S.C. §103, whether taken alone or in combination. We respectfully request withdrawal of each of the Examiner's rejections and objections, and we solicit a Notice of Allowance for all of claims 2-6, 11 and 18-23.

The due date for filing this Response with a Petition for One-Month Extension of Time was Saturday, February 4, 2006. Per 37 C.F.R. §1.7, *"When the day, or the last day fixed by statute or by or under this part for taking any action or paying any fee in the United States Patent and Trademark Office falls on Saturday, Sunday, or on a Federal holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding business day which is not a Saturday, Sunday, or a Federal holiday."*

Therefore, only the One-Month Extension Fee is believed due. A Petition for One Month's Extension of Time is submitted herewith, along with authorization to charge the required fee of \$60 to deposit account No. 12-0600. No further fees are believed due; however, if any additional fee is required in connection with this Amendment and Response, please charge the aforementioned deposit account. Should any issues remain outstanding, the Examiner is encouraged to telephone the undersigned attorney.

Respectfully submitted,

LATHROP & GAGE L.C.

Date: 2/6/2005

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IN THE DRAWINGS

Figures 1-4 are included in the two attached sheets of corrected formal drawings. These formal drawings replace the original Figures 1-4.

Attachment(s): Two sheets of corrected formal drawings.